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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,551	12/28/2000	Shixin Chen	15939-17	6964

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EXAMINER

LE, DANG D

ART UNIT PAPER NUMBER

2834

DATE MAILED: 08/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/750,551

Applicant(s)

CHEN ET AL.

Examiner

Dang D Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 13-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 15-24 is/are rejected.
- 7) ☒ Claim(s) 13 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-10 and 13-24 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claims 13 and 14 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 13 and 14 depend on claim 12, which was canceled in paper no. 6. Accordingly, these claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 9, 10 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites the limitation "said rotating sub-assembly" in line 2 from last line. There is insufficient antecedent basis for this limitation in the claim.

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Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in–

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

6. Claims 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kataoka et al.

Regarding claim 16, Kataoka et al. show an electric spindle motor (Figure 1), comprising:

- A base (2);
- A rotatable member (6) supported by said base and extending therefrom along a rotational axis; and
- A magnetic device (41) operable by an electric current (through coil 42) for moving said rotating member away from said base substantially along said rotational axis so that said rotatable member is less supported by said base during rotation of said rotatable member; and
- A permanent magnet preloading means (43) for magnetically preloading said rotatable member relative said base to prevent free movement of said

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rotatable member relative said base when said magnetic device is not operable by an electric current.

Regarding claim 17, it is noted that Kataoka et al. also show said magnetic device (41) comprising a stator lamination (42b) with coil (42a) securely coupled to said base and a magnetic plate (43) securely coupled to said rotatable member (Figure 2b).

Regarding claim 18, it is noted that Kataoka et al. also show said magnetic device comprising a stator lamination with coil securely coupled to said rotatable member and a magnetic plate securely coupled to said base (Figure 2a).

7. Claim 24 is rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi (U. S. Pat. No. 6,175,174).

Regarding claim 24, it is noted that Takahashi shows an electric spindle motor (Figure 1), comprising:

- A base plate (16);
- A rotatable assembly (14) supported by said base plate;
- A first magnetic means including a stator, coil (36) and magnet (34) operated by a control circuit for supplying electrical current to said coil for generating an axial force to separate the rotatable assembly of the spindle motor from the base plate before the rotatable assembly rotates on operation of the motor and a second magnetic means (48, 46) including a permanent magnet (46) mounted to said rotatable assembly so as to provide a magnetic preloading on said assembly when said current is not being supplied to said first magnetic means.

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Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-6, 8-10, 15 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Stahl et al.

Regarding claim 1, Kataoka et al. show an electric spindle motor (Figure 1), comprising:

- A base plate (2);
- A rotatable assembly (6) including a rotatable sleeve extending substantially perpendicular from said base plate along a rotational axis, wherein said rotatable assembly is supported by said base plate;

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- A stationary shaft (3) securely coupled to said base plate, and extending within said sleeve along said rotational axis and spaced therefrom to define a first clearance gap (8);
- A thrust plate (4) securely coupled to said base plate (2);
- A thrust bearing (9) securely coupled to said rotating assembly, wherein said thrust bearing is shaped complementary with said thrust plate and spaced apart therefrom to form a second clearance gap (on C2, Figure 7);
- A gas fluid situated within said second clearance gap for providing at least axial stiffness for said rotatable assembly;
- A stator (11) for causing the rotation of said rotatable assembly; and
- A magnetic device (41) operated by an electric current (through coil 42) for moving said rotatable assembly away from said base plate substantially along said rotational axis so that said rotatable assembly is less supported by said base plate during rotation of said rotating assembly; and
- A magnetic preloading means including a permanent magnet (43) for preventing free movement of said rotatable member relative said base when said current is not supplied to said magnetic device.

Kataoka et al. do not show a liquid fluid situated within said first clearance gap for providing at least radial stiffness for said rotatable sleeve.

Stahl et al. show a liquid fluid (26) situated within said first clearance gap for providing at least radial stiffness for said rotatable sleeve for the purpose of increasing stiffness of the bearing.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to situate a liquid fluid within said first clearance gap for providing at least radial stiffness for said rotatable sleeve as taught by Stahl for the purpose discussed above.

Regarding claim 2, it is noted that Kataoka et al. also show said magnetic device (41) comprising a stator lamination (42b) with coil (42a) securely coupled to said base and Stahl et al. also show a magnetic plate (110, 122) securely coupled to said rotatable assembly (Figure 3) and said magnetic preloading means permanent magnet (118) being mounted to said magnetic plate.

Regarding claim 3, it is noted that Kataoka et al. also show said magnetic device comprising a stator lamination with coil securely coupled to said rotatable assembly and a magnetic plate securely coupled to said base (Figure 2a).

Regarding claim 4, it is noted that Stahl et al. also show at least one magnetic seal (10) to reduce leaking of said liquid fluid from said first clearance gap wherein said at least one magnetic seal comprises upper and lower magnetic seals to reduce leaking of said liquid fluid between an upper end of said sleeve and said shaft, and a lower end of said sleeve and said shaft (top and bottom, Figure 3).

Regarding claim 5, it is noted that Stahl et al. also show said magnetic seal (10, Figure 1) comprising a sealing ring (18) disposed proximate an end of said sleeve and in contact with a perimeter surface of said shaft (20), wherein a ferrofluid gap (30) exist between said sealing ring and said shaft to receive a ferrofluid (26), and a magnetic structure (12) disposed proximate said sealing ring to hold said ferrofluid within said

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ferrofluid gap, wherein said magnetic structure includes a magnetic ring situated around said sealing ring.

Regarding claim 6, it is noted that Stahl et al. also show said ferrofluid receiving gap (30) being formed by a recess in the sealing ring, and wherein said ferrofluid gap is formed between a wedge shaped inner surface of said sealing ring and said shaft.

Regarding claim 8, it is noted that Stahl et al. also show said magnetic seal providing an electrical path for discharging static charges from a surface of disk disposed on said rotatable assembly.

Regarding claim 9, Kataoka et al. show an electric spindle motor (Figure 1), comprising:

- A base plate (2);
- A sleeve (6) extending substantially perpendicular from said base plate along a rotational axis;
- A shaft (3) extending within said sleeve along said rotational axis and spaced therefrom to define a clearance gap (8);
- A rotatable assembly supported by said base plate;
- A magnetic device (41) operable on the supply of electric current (through coil 42) for moving said rotatable assembly away from said base plate substantially along said rotational axis so that said rotatable assembly is less supported by said base plate during rotation of said rotating assembly; and

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- A permanent magnet magnetic preloading means (43) for magnetically preloading said rotatable assembly relative said base so as to prevent free movement of said rotating sub-assembly relative said base plate when said magnetic device is not operating.

Kataoka et al. do not show a liquid fluid situated within said clearance gap for providing at least radial stiffness for said sleeve and at least one magnetic seal to reduce leaking of said liquid fluid from said clearance gap.

Stahl et al. show a liquid fluid (26) situated within said clearance gap for providing at least radial stiffness for said sleeve and at least one magnetic seal (10, Figure 1) to reduce leaking of said liquid fluid from said clearance gap for the purpose of increasing stiffness of the bearing and retaining fluid in place.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to situate a liquid fluid within said clearance gap for providing at least radial stiffness for said sleeve and to use at least one magnetic seal to reduce leaking of said liquid fluid from said clearance gap as taught by Stahl for the purpose discussed above.

Regarding claim 10, it is noted that Stahl et al. also show said magnetic seal comprising a sealing ring (18) disposed proximate an end of said sleeve and in contact with a perimeter surface of said shaft, wherein a ferrofluid gap exist between said sealing ring and said shaft to receive a ferrofluid, and a magnetic structure (12) disposed proximate said sealing ring to hold said ferrofluid within said ferrofluid gap

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Regarding claim 15, it is noted that Stahl et al. also show said magnetic seal (10) providing an electrical path for discharging static charges from a surface of disk disposed on said rotatable assembly.

Regarding claim 19, Kataoka et al. show all of the limitations of the claimed invention except for at least one magnetic seal in a clearance gap between a sleeve on said rotatable member and a shaft on said base.

Stahl et al. show at least one magnetic seal (10, Figure 1) to reduce leaking of a liquid fluid from a clearance gap for the purpose of retaining the fluid in place.

Since Kataoka et al. and Stahl et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use at least one magnetic seal to reduce leaking of a liquid fluid from a clearance gap as taught by Stahl for the purpose discussed above.

Regarding claim 20, it is noted that Stahl et al. also show said magnetic seal (10, Figure 1) comprising a sealing ring (18) disposed proximate an end of said sleeve and in contact with a perimeter surface of said shaft (20), wherein a ferrofluid gap (30) exist between said sealing ring and said shaft to receive a ferrofluid (26), and a magnetic structure (12) disposed proximate said sealing ring to hold said ferrofluid within said ferrofluid gap.

Regarding claim 21, it is noted that Stahl et al. also show said magnetic structure including a magnetic ring (12) situated around said sealing ring.

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Regarding claim 22, it is noted that Stahl et al. also show said ferrofluid receiving gap (30) being formed by a recess in the sealing ring, and wherein said ferrofluid gap is formed between a wedge shaped inner surface of said sealing ring and said shaft.

Regarding claim 23, it is noted that Stahl et al. also show said magnetic seal providing an electrical path for discharging static charges from a surface of disk disposed on said rotatable assembly.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Stahl et al. as applied to claim 1 above, and further in view of Takahashi.

Regarding claim 7, the electric spindle motor of Kataoka et al. modified by Stahl et al. includes all that is recited in the claimed invention except for upper and lower liquid absorbers situated proximate respective upper and lower magnetic seals for absorbing said liquid fluid if it leaks.

Takahashi shows upper liquid absorber (45) for absorbing the liquid fluid if it leaks for the purpose of preventing leaking.

Since Kataoka et al., Stahl et al. and Takahashi are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to situate upper and lower liquid absorbers proximate

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respective upper and lower magnetic seals for absorbing said liquid fluid if it leaks as taught by Takahashi for the purpose discussed above.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Information on How to Contact USPTO

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D Le whose telephone number is (703) 305-0156. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

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308-7382 for regular communications and (703) 308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

DDL
August 20, 2002

DL

Sang L L